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REMARKS

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Independent claims 1 and 6 have each been amended to more particularly claim the subject matter that the applicants regard as their invention. Additionally, claims 2, 5, 8, and 9 have been amended in minor respects, new claim 11 has been added, and claims 3 and 7 have been canceled without prejudice or disclaimer.

An objection to the drawing was made, but the present application does not contain a drawing. And with respect to a showing of an "electrical heating element," one of ordinary skill in the art, to whom a patent application is addressed, would be able from the disclosure contained in the present application, and without a drawing, readily to make and use the claimed invention. Indeed, a heating element could take any of a myriad of different geometrical forms, depending upon the nature of the apparatus with which it is to be used and the purposes for which it is included in any such apparatus, and thus a drawing would not be needed in order to understand the disclosure and to carry out the invention as it is described and claimed. In that regard, it should be noted that neither the examiner-cited Schrewelius '145 reference, which claims a thermocouple, nor the examiner-cited Sekhar et al. '399 reference, which claims an electrical heating element, includes a drawing. Additionally, the Sundberg '408 patent, which claims an electric resistance element and was cited in the Information Disclosure Statement, also does not contain a drawing. In view of the above, and also in view of the fact that the claims are directed to a generic heating element, one of no particular geometric form, it is respectfully requested

that the drawing requirement be reconsidered and that it be withdrawn.

Claims 7 and 9 were rejected as indefinite based upon the claim dependency that was recited in each of those claims. In that regard, the examiner correctly assumed the proper claim dependency. Further, the subject matter of dependent claim 7 has been incorporated into claim 6, and claim 9 has been amended to depend from claim 6, thus overcoming the indefiniteness.

Claims 1 and 3 through 9 were rejected as obvious based upon a combination of the Schrewelius '145 and '959 references, together with the Sekhar et al. '399 reference. With respect to Schrewelius '145, the examiner acknowledged that that reference did not refer to Al_2O_3 , nor did it disclose SiO_2 of at least 98% purity. However, and very significantly, the Schrewelius '145 reference also does not disclose the claimed molybdenum silicide material $(Mo(Si_{1-x}Al_x)_2)$ in combination with SiO_2 . Instead, it discloses an alloy having a considerably different composition, namely $(Mo_{0.7}Ti_{0.3})(Si_{0.8}Al_{0.2})$. It also does not indicate any recognition of a peeling Al_2O_3 layer when subjected to thermal cycling.

The Schrewelius '959 reference was cited and relied upon for showing a molybdenum silicide heating element in which Al_2O_3 is formed. However, the Al_2O_3 is disclosed as merely a constituent that reacts with SiO_2 to form a quartz or silica glass film (see, e.g., Schrewelius '959 at col. 1, line 23; col. 2, lines 47-48, and lines 69-70; col. 3, line 1; col. 5, lines 44-45; col. 6, lines 3-4; and col. 8, lines 70-71). Thus, although that reference mentions Al_2O_3 , it does so only in the context of a constituent that reacts with SiO_2 to form a glass phase. It does not

disclose or even suggest an Al_2O_3 surface layer, but instead an SiO_2 surface layer. Moreover, the composition disclosed at the bottom of column 5 of that reference includes the types of impurities that are characteristic of bentonite clay, which leads to the peelable outer oxide layer and which is overcome in the present invention by providing SiO_2 of at least 98% purity. It also does not indicate any recognition of a peeling Al_2O_3 layer when subjected to thermal cycling.

The Sekhar et al. '399 reference was cited for disclosing pure SiO_2 in the context of an electrical heating element. But that reference relates to different materials and different compositions. In fact, there is no mention at all in that reference of the major constituent in the composition of the claimed invention, which is $\text{Mo}(\text{Si}_{1-x}\text{Al}_x)_2$. It also does not indicate any recognition of a peeling Al_2O_3 layer when subjected to thermal cycling.

In addition to the differences noted above between the individual references and the claimed invention, there are no disclosures in any of the references relied upon that would motivate one having only ordinary skill in the art to combine them in any way at all, let alone to arrive at the claimed invention. And it is not apparent from the references just which parts of which reference should be combined with which parts of the other references and which parts of the references should be ignored or discarded. Indeed, it appears that the only motivation for even selecting the references, and then combining them in a particular way is the present disclosure. But it is improper to use as a road map or a template an inventor's disclosure in order to use against him that which only

he has disclosed.

Additionally, each of independent claims 1 and 6 as hereinabove amended now recites the range within which x lies, as well as reciting an Al_2O_3 protective surface layer that does not peel under thermal cycling between room temperature and about 1500°C . None of the references relied upon discloses or suggests the $\text{Mo}(\text{Si}_{1-x}\text{Al}_x)_2$ material wherein x is in the range of 0.4 to 0.6, nor do any of the references disclose or suggest an Al_2O_3 surface layer, nor do any of the references even mention or appreciate the problem to which the present invention is directed – the peeling of a surface layer of Al_2O_3 upon subjection to thermal cycling of a heating element having such a surface layer. Thus, whether the references are considered alone or together, neither the individual references nor any attempted combination of them teaches or suggests the invention as it is now claimed in amended claims 1 and 6.

Claims 4 and 5 each depend from amended claim 1, either directly or indirectly, and claims 8 and 9 each depend from amended claim 6. Therefore the same distinctions as are noted above in connection with claims 1 and 6 apply with equal effect to those dependent claims. Further, the dependent claims contain additional recitations that further distinguish the invention as so claimed from the teachings of the references relied upon.

Claims 2 and 10 were rejected as obvious based upon the Schrewelius '145 and '959 references, together with the Sekhar et al. '399 reference, and in view of the Chyung et al. '091 reference. The Chyung et al. '091 reference was cited merely for a disclosure of mullite. However, the Chyung

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et al. '091 reference also lacks the claimed features that are noted in the discussion above relative to the other references that were relied upon. Accordingly, the addition of that reference to the combination asserted in connection with claim 1 still does not teach or suggest the invention as claimed in amended claim 1, from which each of claims 2 and 10 depend. Again, however, there are no disclosures in any of the references relied upon that would lead one having only ordinary skill in the art to combine them in any way at all, let alone to arrive at the claimed invention. And it is not apparent from the references just which parts of which reference should be combined with which parts of the other references and which parts of the references should be ignored or discarded. Indeed, it appears that the only motivation for even selecting the references and then combining them in a particular way is the present disclosure. But it is improper to use as a road map or a template an inventor's disclosure in order to use against him that which only he has disclosed.

Finally, new claim 11 has been added to further recite the use of sillimanite in the method of claim 2. None of the references relied upon shows or suggests what is claimed in claim 11.

Based upon the foregoing amendments and remarks, the claims as they now stand in the application are believed clearly to be in allowable form in that they patentably distinguish over the disclosures contained in the references that were cited and relied upon by the examiner, whether those references be considered alone or together. Consequently, this application is believed now to be in condition for allowance, and reconsideration and reexamination of the application is

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respectfully requested with a view toward the issuance of a Notice of Allowance.

The examiner is cordially invited to telephone the undersigned attorney if this amendment raises any questions, so that any such question can be quickly resolved in order that the present application can proceed toward allowance.

Respectfully submitted,



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